



6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R08-OAR-2018-0606; FRL-9992-73-Region 8]

Approval and Promulgation of Air Quality Implementation Plans; Wyoming; Revisions to Regional Haze State Implementation Plan; Revisions to Regional Haze Federal Implementation Plan

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is finalizing approval of State Implementation Plan (SIP) revisions submitted by the State of Wyoming on April 5, 2018, addressing regional haze. The revisions modify the sulfur dioxide (SO₂) emissions reporting requirements for Laramie River Station Units 1 and 2. We are also finalizing revisions to the nitrogen oxides (NO_x) emission limits for Laramie River Units 1, 2 and 3 in the Federal Implementation Plan (FIP) for regional haze in Wyoming. The revisions to the Wyoming regional haze FIP also establish a SO₂ emission limit averaged annually across both Laramie River Station Units 1 and 2. These units are operated by, and owned in part by, Basin Electric Power Cooperative (Basin Electric). The EPA is taking this action pursuant to section 110 of the Clean Air Act (CAA).

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: The EPA has established a docket for this action under Docket ID No. EPA-R08-OAR-2018-0606. All documents in the docket are listed on the <http://www.regulations.gov> website. Although listed in the index, some information is not publicly available, e.g., CBI or

other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available through <http://www.regulations.gov>, or please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section for additional availability information.

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SUPPLEMENTARY INFORMATION: Throughout this document wherever “we,” “us,” or “our” is used, we mean the EPA.

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I. Proposed Action

On January 30, 2014, the EPA promulgated a final rule titled, “Approval, Disapproval and Promulgation of Implementation Plans; State of Wyoming; Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze,” approving, in part, a regional haze SIP revision submitted by the State of Wyoming on January 12, 2011.¹ In the final rule, the EPA also disapproved, in part, the Wyoming regional haze SIP, including the NO_x BART emission limit of 0.21 lb/MMBtu (30-day rolling average) for Laramie River Units 1, 2 and 3, and promulgated a FIP that imposed a NO_x BART emission limit of 0.07 lb/MMBtu (30-day rolling average) for each of the three Laramie River Units, among other actions.

On October 11, 2018, the EPA proposed to revise the FIP per the terms of the settlement agreement by amending the NO_x and SO₂ emission limits for Laramie River.² Specifically, the EPA proposed to: 1) revise the NO_x emission limit and associated compliance date for Unit 1; 2) through a BART alternative, revise the NO_x emission limits for Units 2 and 3, and add a SO₂ emission limit averaged annually across Units 1 and 2 along with the associated compliance

¹ 79 FR 5032 (January 30, 2014).

² 83 FR 51403 (October 11, 2018). Letter from Eileen T. McDonough, U.S. Department of Justice, to Elizabeth Morrisseau, Wyoming Attorney General’s Office, and Christina F. Gomez, Denise W. Kennedy, and Patrick R. Day, Holland & Hart LLC (notification that both the EPA and the Department of Justice (DOJ) determined not to withdraw their consent to the Settlement Agreement) (April 24, 2017); Settlement Agreement between Basin Electric Power Cooperative, the State of Wyoming, and the EPA (April 24, 2017); First Amendment to Settlement Agreement (pursuant to Paragraph 15 of the Agreement, extended the deadline for the EPA to determine whether to withdraw or consent to the Settlement Agreement in Paragraph 1 to May 3, 2017); Second Amendment to Settlement Agreement (pursuant to Paragraph 15 of the Agreement, amended the date in Paragraph 5.b.ii. for the SO₂ emission limits for Laramie River Units 1 and 2 to commence December 31, 2018) (September 14, 2018); Letter from Eileen T. McDonough, U.S. Department of Justice, to Erik Petersen, Wyoming Attorney General’s Office, and Christina F. Gomez, Denise W. Kennedy, and Patrick R. Day, Holland & Hart LLC (notification regarding recent partial government shut-down and Paragraph 15 of the Settlement Agreement regarding extension of deadlines caused by lapse in appropriations) (March 28, 2019); (Settlement Agreement).

dates; and 3) require selective catalytic reduction (SCR) on Unit 1 and selective non-catalytic reduction (SNCR) on Units 2 and 3.³

The EPA also proposed to approve SIP revisions submitted by the State of Wyoming on April 5, 2018, that amended the SO₂ emissions reporting requirements for Laramie River Units 1 and 2 as they pertain to the Western Backstop Sulfur Dioxide Trading Program under 40 CFR 51.309. Wyoming was one of several states that elected to participate in the backstop trading program. The approved SIP revisions ensure that SO₂ emission reductions under the settlement agreement are not counted as reductions under the backstop trading program, and address how Basin Electric is required to calculate reportable SO₂ emissions, when Basin Electric is required to use the revised SO₂ emissions calculation method, and how the reported SO₂ emissions will be used within the context of the SO₂ emissions milestone inventory.

II. Background

A. Requirements of the Clean Air Act and the EPA's Regional Haze Rule

In section 169A of the 1977 Amendments to the CAA, Congress created a program for protecting visibility in the nation's national parks and wilderness areas. This section of the CAA establishes "as a national goal the prevention of any future, and the remedying of any existing,

³ Although we are finalizing revisions to the Wyoming regional haze FIP, Wyoming may always submit a new regional haze SIP to the EPA for review, and we would welcome such a submission. The CAA requires the EPA to act within 12 months on a SIP submittal from the time that it is determined to be complete. If Wyoming were to submit a SIP revision meeting the requirements of the CAA and the regional haze regulations, we would propose approval of the State's plan as expeditiously as practicable.

impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution.”⁴

The EPA promulgated a rule to address regional haze on July 1, 1999.⁵ The Regional Haze Rule (RHR) revised the existing visibility regulations⁶ to integrate provisions addressing regional haze and established a comprehensive visibility protection program for Class I areas. The requirements for regional haze, found at 40 CFR 51.308 and 51.309, are included in the EPA’s visibility protection regulations at 40 CFR 51.300 through 51.309. The EPA revised the RHR on January 10, 2017.⁷

The CAA requires each state to develop a SIP to meet various air quality requirements, including protection of visibility.⁸ Regional haze SIPs must assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas. A state must submit its SIP and SIP revisions to the EPA for review and approval. Once approved, a SIP is enforceable by the EPA and citizens under the CAA; that is, the SIP is federally enforceable. If a state elects not to make a required SIP submittal, fails to make a required SIP submittal, or if we

⁴ 42 U.S.C. 7491(a). Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6000 acres, wilderness areas and national memorial parks exceeding 5000 acres, and all international parks that were in existence on August 7, 1977. 42 U.S.C. 7472(a). In accordance with section 169A of the CAA, the EPA, in consultation with the Department of Interior, promulgated a list of 156 areas where visibility is identified as an important value. 44 FR 69122 (November 30, 1979). The extent of a mandatory Class I area includes subsequent changes in boundaries, such as park expansions. 42 U.S.C. 7472(a). Although states and tribes may designate as Class I additional areas whose visibility they consider to be an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to “mandatory Class I Federal areas.” Each mandatory Class I Federal area is the responsibility of a “Federal Land Manager.” 42 U.S.C. 7602(i). When we use the term “Class I area” in this section, we mean a “mandatory Class I Federal area.”

⁵ 64 FR 35714, 35714 (July 1, 1999) (codified at 40 CFR part 51, subpart P).

⁶ The EPA had previously promulgated regulations to address visibility impairment in Class I areas that is “reasonably attributable” to a single source or small group of sources, i.e., reasonably attributable visibility impairment (RAVI). 45 FR 80084, 80084 (December 2, 1980).

⁷ 82 FR 3078 (January 10, 2017).

⁸ 42 U.S.C. 7410(a), 7491, and 7492(a); CAA sections 110(a), 169A, and 169B.

find that a state's required submittal is incomplete or not approvable, then we must promulgate a FIP to fill this regulatory gap.⁹

B. Best Available Retrofit Technology (BART)

Section 169A of the CAA directs states as part of their SIPs, or the EPA when developing a FIP in the absence of an approved regional haze SIP, to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, section 169A(b)(2)(A) of the CAA requires states' implementation plans to contain such measures as may be necessary to make reasonable progress toward the natural visibility goal, including a requirement that certain existing major stationary sources built between 1962 and 1977 procure, install and operate the "best available retrofit technology" as determined by the states through their SIPs, or as determined by the EPA when it promulgates a FIP. Under the RHR, states (or the EPA) are directed to conduct BART determinations for such "BART-eligible" sources that may reasonably be anticipated to cause or contribute to any visibility impairment in a Class I area.¹⁰ Rather than requiring source-specific BART controls, states also have the flexibility to adopt an emissions trading program or other alternative program as long as the alternative provides greater reasonable progress towards improving visibility than BART.¹¹

⁹ 42 U.S.C. 7410(c)(1).

¹⁰ 40 CFR 51.308(e). The EPA designed the Guidelines for BART Determinations Under the Regional Haze Rule (Guidelines) 40 CFR Appendix Y to Part 51 "to help States and others (1) identify those sources that must comply with the BART requirement, and (2) determine the level of control technology that represents BART for each source." Guidelines, Section I.A. Section II of the Guidelines describes the four steps to identify BART sources, and Section III explains how to identify BART sources (i.e., sources that are "subject to BART").

¹¹ 40 CFR 51.308(e)(2). *WildEarth Guardians v. EPA*, 770 F.3d 919 (10th Cir. 2014).

C. BART Alternatives

An alternative program to BART must meet requirements under 40 CFR 51.308(e)(2) and (3). In order to demonstrate that the alternative program achieves greater reasonable progress than source-specific BART, a state, or the EPA if developing a FIP, must demonstrate that its SIP meets the requirements in 40 CFR 51.308(e)(2)(i) through (v). The state or the EPA must conduct an analysis of the best system of continuous emission control technology available and the associated reductions for each source subject to BART covered by the alternative program, commonly referred to as a “BART benchmark.” Visibility improvement under the BART benchmark is compared to improvement under an alternative using one of the three tests described below to determine whether that alternative achieves greater reasonable progress than source-specific BART. Where the alternative program has been designed to meet requirements other than BART, simplifying assumptions may be used to establish a BART benchmark.

Pursuant to 40 CFR 51.308(e)(2)(i)(E), the state or the EPA must also provide a determination that the alternative program achieves greater reasonable progress than BART under 40 CFR 51.308(e)(3) or otherwise based on the clear weight of evidence. Title 40 CFR 51.308(e)(3), in turn, provides specific tests applicable under specific circumstances for determining whether the alternative achieves greater reasonable progress than BART. If the distribution of emissions for the alternative program is not substantially different than for BART, and the alternative program results in greater emissions reductions of each of the pollutants covered by the alternative, then the alternative program may be deemed to achieve greater reasonable progress. If the distribution of emissions is significantly different, the differences in visibility between BART and the alternative program must be determined by conducting air quality modeling and evaluating visibility impacts on the best and worst 20 percent of days at

each impacted Class I area. The modeling demonstrates “greater reasonable progress” if both of the two following criteria are met: (1) visibility does not decline in any Class I area; and (2) there is overall improvement in visibility when comparing the average differences between BART and the alternative program across all the affected Class I areas. Alternatively, pursuant to 40 CFR 51.308(e)(2)(i)(E), states may show that the alternative achieves greater reasonable progress than the BART benchmark “based on the clear weight of evidence” determinations.¹²

Generally, a SIP or FIP addressing regional haze must include emission limits and compliance schedules for each source subject to BART. In addition to the RHR’s requirements, general SIP requirements mandate that the SIP or FIP include all regulatory requirements related to monitoring, recordkeeping, and reporting for the alternative’s enforceable requirements. See CAA section 110(a); 40 CFR part 51, subpart K.

D. Reasonable Progress Requirements

In addition to BART requirements, as mentioned previously, each regional haze SIP or FIP must contain measures as necessary to make reasonable progress towards the national visibility goal. Finally, the SIP or FIP must calculate reasonable progress goals (RPGs) for each Class I area within the state for the plan implementation period (or “planning period”), based on the measures included in the long-term strategy for making reasonable progress.¹³ If an RPG provides for a slower rate of improvement in visibility than the rate under which the national goal of no anthropogenic visibility impact would be attained by 2064, the SIP or FIP must

¹² 40 CFR 51.308(e)(2).

¹³ 40 CFR 51.308(d).

demonstrate, based on the four reasonable progress factors, why that faster rate is not reasonable and the slower rate provided for by the SIP or FIP's state-specific RPG is reasonable.¹⁴

E. Consultation with Federal Land Managers (FLMs)

The RHR requires that a state, or the EPA if promulgating a FIP that fills a gap in the SIP with respect to this requirement, consult with FLMs before adopting and submitting a required SIP or SIP revision, or a required FIP or FIP revision.¹⁵ Further, the EPA, or state when considering a SIP revision, must include in its proposal a description of how it addressed any comments provided by the FLMs.

F. Requirements for Regional Haze SIPs Submitted Under 40 CFR 51.309

The EPA's RHR provides two paths to address regional haze. One is 40 CFR 51.308, requiring states to perform source-specific BART determinations (or adopt a BART alternative that achieves greater visibility improvement than BART) and determine what additional measures are necessary to make reasonable progress. The other method for addressing regional haze is through 40 CFR 51.309, and is an option for nine states termed the "Transport Region States," which include: Arizona, California, Colorado, Idaho, Nevada, New Mexico, Oregon, Utah and Wyoming. By meeting the requirements under 40 CFR 51.309, a Transport Region State can be deemed, for the purposes of the first implementation period, to be making reasonable progress toward the national goal of achieving natural visibility conditions for the 16 Class I areas on the Colorado Plateau.¹⁶

¹⁴ 40 CFR 51.308(d)(1)(ii).

¹⁵ 40 CFR 51.308(i).

¹⁶ The Colorado Plateau is a high, semi-arid tableland in southeast Utah, northern Arizona, northwest New Mexico and western Colorado. The 16 mandatory Class I areas are: Grand Canyon National Park, Mount Baldy Wilderness,

Section 309 requires those Transport Region States that choose to participate to adopt regional haze strategies that are based on recommendations from the Grand Canyon Visibility Transport Commission (GCVTC) for protecting the 16 Class I areas on the Colorado Plateau. The purpose of the GCVTC was to assess information about the adverse impacts on visibility in and around the 16 Class I areas on the Colorado Plateau and to provide policy recommendations to the EPA to address such impacts. The GCVTC determined that all Transport Region States could potentially impact the Class I areas on the Colorado Plateau. The GCVTC submitted a report to the EPA in 1996 for protecting visibility for the Class I areas on the Colorado Plateau, and the EPA codified these recommendations as an option available to states as part of the RHR.¹⁷

The EPA determined that the GCVTC strategies would provide for reasonable progress in mitigating regional haze if supplemented by an annex containing quantitative emission reduction milestones and provisions for a trading program or other alternative measure.¹⁸ In September 2000, the Western Regional Air Partnership (WRAP), which is the successor organization to the GCVTC, submitted an annex to the EPA. The annex contained SO₂ emissions reduction milestones and detailed provisions of a backstop trading program to be implemented

Petrified Forest National Park, Sycamore Canyon Wilderness, Black Canyon of the Gunnison National Park Wilderness, Flat Tops Wilderness, Maroon Bells Wilderness, Mesa Verde National Park, Weminuche Wilderness, West Elk Wilderness, San Pedro Park Wilderness, Arches National Park, Bryce Canyon National Park, Canyonlands National Park, Capital Reef National Park and Zion National Park.

¹⁷ 64 FR 35714, 35749 (July 1, 1999).

¹⁸ 64 FR 35714, 35749, 35756 (July 1, 1999).

automatically if voluntary measures failed to achieve the SO₂ milestones. The EPA codified the annex on June 5, 2003, at 40 CFR 51.309(h).¹⁹

Five western states, including Wyoming, submitted implementation plans under section 309 in 2003.²⁰ The EPA was challenged by the Center for Energy and Economic Development (CEED) on the validity of the annex provisions. In *CEED v. EPA*, the U.S. Court of Appeals for the District of Columbia vacated the EPA's adoption of the WRAP annex.²¹ In response to the court's decision, the EPA rescinded the annex requirements adopted under 40 CFR 51.309(h), but left in place the stationary source requirements in 40 CFR 51.309(d)(4).²² The requirements under 40 CFR 51.309(d)(4) contain general requirements pertaining to stationary sources and market trading, and allow states to adopt alternatives to source-specific BART.

Thus, rather than requiring source-specific BART controls as explained previously in Section II.B, states have the flexibility to adopt an emissions trading program or other alternative program if the alternative provides greater reasonable progress than would be achieved by the application of BART, pursuant to 40 CFR 51.308(e)(2). Under 40 CFR 51.309, some states can satisfy the SO₂ BART requirements by adopting SO₂ emissions milestones and a backstop trading program. Under this approach, states must establish declining SO₂ emissions milestones for each year of the program through 2018. The milestones must be consistent with the

¹⁹ 68 FR 33764, 33767 (June 5, 2003).

²⁰ Five states – Arizona, New Mexico, Oregon, Utah and Wyoming – and Albuquerque-Bernalillo County, New Mexico, initially exercised this option by submitting plans to the EPA in December 2003. Oregon elected to cease participation in 2006, and Arizona elected to cease participation in 2010. In 2012, the EPA approved Wyoming's SIP submittals that included the Western Backstop Sulfur Dioxide Trading Program. 77 FR 73926 (Dec. 12, 2012).

²¹ *Ctr. for Energy & Econ. Dev. v. EPA*, 398 F.3d 653, 654 (D.C. Cir. 2005).

²² 71 FR 60612 (October 13, 2006).

GCVTC's goal of 50 to 70 percent reduction in SO₂ emissions by 2040. The backstop trading program would be implemented if a milestone is exceeded and the program is triggered.²³

G. *Modeling*

The EPA routinely uses models as a part of our analytical methodology to provide for regularity, uniformity and to inform our decision-making process. The CAMx model is one such dispersion model and in particular it is a photochemical grid model²⁴ that uses and produces complex scientific data, including emissions from all sources, with a realistic representation of formation, transport, and processes that cause visibility degradation, estimating downwind concentrations paired in space and time. The EPA's guidance supports use of this particular model for this application.²⁵ The CAMx model simulates air quality over many geographic scales and treats a wide variety of inert and chemically active pollutants, including ozone, particulate matter, inorganic and organic PM_{2.5}/PM₁₀, mercury and other toxics. CAMx also has plume-in-grid and source apportionment capabilities.²⁶ At this point in time, use of a photochemical grid model is the best available method for predicting visibility improvement.

²³ 40 CFR 51.309(d)(4)(v).

²⁴ CAMx User's Guide: Comprehensive Air Quality Model with extensions, Version 6.50, Ramboll Environment and Health, 773 San Marin Drive, Suite 2115, Novato, California 94998. <http://www.camx.com> (April 2018) (CAMx User's Guide).

²⁵ *Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze*, EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC (December 3, 2014). (We note that the regional haze section of this guidance explains that other portions of the guidance are applicable to regional haze, p. 149.). https://www3.epa.gov/ttn/scram/guidance/guide/Draft_O3-PM-RH_Modeling_Guidance-2014.pdf. 40 CFR pt. 51, app. Y: IV.D.5 (how to determine visibility impacts from the BART determination); 40 CFR 51.308(e)(3) (use of dispersion modeling for BART alternatives).

²⁶ Photochemical Air Quality Modeling (<https://www.epa.gov/scram/photochemical-air-quality-modeling>). CAMx is a photochemical grid model, which the EPA describes as follows: Photochemical air quality models have become widely recognized and routinely utilized tools for regulatory analysis and attainment demonstrations by assessing the effectiveness of control strategies. These photochemical models are large-scale air quality models that simulate the changes of pollutant concentrations in the atmosphere using a set of mathematical equations characterizing the

CAMx has a scientifically current treatment of chemistry to simulate transformation of emissions into visibility-impairing particles of species such as ammonium nitrate and ammonium sulfate and is often employed in large-scale modeling when many sources of pollution and/or long transport distances are involved. Photochemical grid models like CAMx include all emissions sources and have realistic representation of formation, transport and removal processes of the particulate matter that causes visibility degradation.

The starting point for assessing visibility impacts for different levels of emissions from Laramie River was the Three-State Air Quality Modeling Study (3SAQS) modeling platform that provides a framework for addressing air quality impacts in Colorado, Utah and Wyoming. The 3SAQS is a publicly available platform intended to facilitate air resources analyses. The 3SAQS developed a base year modeling platform using the year 2008 to leverage work completed during the West-wide Jump-start Air Quality modeling study (WestJump), which covered the entire western United States. For the Laramie River modeling, AECOM reduced the modeling domain to an area within 500 kilometers of the facility and performed additional modeling to refine the modeling domain from the 3SAQS 12-kilometer (km) grid resolution to a finer 4-km grid resolution. The refined spatial resolution was used to more accurately simulate the concentration gradients of gas and particulate species in the plumes emitted from the source facilities.

chemical and physical processes in the atmosphere. These models are applied at multiple spatial scales, including from local, regional, national and global.

The CAMx modeling analysis established specific model configurations and other inputs. The model requires configuration and input data such as defined horizontal and vertical modeling domains,²⁷ gridded meteorological data, emissions data, and a set of files for the physical and chemical reaction calculations.²⁸ Meteorological inputs were developed using the Weather Research and Forecast (WRF) Model.²⁹ The Sparse Matrix Operator Kernel Emissions (SMOKE) model was used for emissions inputs. SMOKE is an emissions processing system that converts emission inventory data into the formatted emissions files required by an air quality simulation model.³⁰ Collectively the three models are referred to as the CAMx modeling system.³¹

The three modeling scenarios conducted were:

- Baseline Scenario. This scenario included the actual emission rates for all three units of LRS during the 2001 to 2003 period.³²
- EPA FIP Scenario (BART). This scenario included the emission rates for all three units of Laramie River Station that correspond to the EPA proposed FIP control strategy.³³

²⁷ AECOM, *Laramie River Station Power Plant Visibility Impacts for Two Emissions Control Scenarios: Final Report* (Final Report), p. 2-1, 2-3 (May 2016).

²⁸ Final Report, p. 2-1, 2-5 – 2-7.

²⁹ Final Report, p. 2-4.

³⁰ Final Report, p. 2-4 – 2-5. In addition to the emission inputs via SMOKE, emissions from the Laramie River Station and other sources were input into the model as further described in the Protocol and Final Report.

³¹ Final Report, p. 1-1.

³² Final Report, p. 3-4.

³³ Final Report, p. 3-4 – 3-5.

- Basin Electric Scenario (BART alternative). This scenario included the emission rates for all three units of Laramie River Station that correspond to an alternative control strategy proposed by Basin Electric.³⁴

For the two-prong test, an existing projected 2020 emissions database was used to estimate emissions of sources within the modeling domains. The existing 2020 database was derived from the 3SAQS study, which projected emissions from 2008 to 2020. Since the BART alternative emissions reductions would not be fully in place until the end of 2018, the 2020 emissions projections are more representative of the air quality conditions that will be obtained while the BART alternative is being implemented than the 2008 database. In the three 2020 CAMx modeling scenarios, Laramie River emissions were modeled to represent the baseline, the BART 2014 FIP, and the proposed BART alternative.

The CAMx-modeled concentrations for sulfur, nitrogen, and primary particulate matter (PM) were tracked using the CAMx Particulate Source Apportionment Technology (PSAT) tool so that the concentrations and visibility impacts due to Laramie River could be separated out from those due to the total of all other modeled sources. AECOM computed visibility impairment due to Laramie River using the EPA's Modeled Attainment Test Software (MATS) tool which bias corrects CAMx outputs to available measurements of PM species and uses the revised Interagency Monitoring of Protected Visual Environments (IMPROVE) equation to calculate the 20 percent best and 20 percent worst days for visibility impacts.³⁵ Finally, a typical

³⁴ Final Report, p. 3-5 – 3-6.

³⁵ Visibility impairment is calculated based on the summation of extinction due to each visibility impairing pollutant. The concentration of each visibility impairing pollutant is either measured or obtained from the model estimates. These concentrations are then used to calculate the total visibility impairment based on the light absorbing

year modeling scenario (2008) was developed to enable calculation of the Relative Response Factors (RRF),³⁶ which were developed from monitoring data and used along with the EPA's MATS to correct for bias in the visibility results.³⁷

H. Regulatory and Legal History of the 2014 Wyoming SIP and FIP

On January 30, 2014, the EPA promulgated a final rule titled, "Approval, Disapproval and Promulgation of Implementation Plans; State of Wyoming; Regional Haze State Implementation Plan; Federal Implementation Plan for Regional Haze," approving, in part, a regional haze SIP revision submitted by the State of Wyoming on January 12, 2011.³⁸ In the final rule, the EPA also disapproved, in part, the Wyoming regional haze SIP, including the SIP NO_x BART emission limit of 0.21 lb/MMBtu (30-day rolling average) for each of the three Laramie River Units, and promulgated a FIP that imposed a NO_x BART emission limit of 0.07 lb/MMBtu (30-day rolling average) at each of the three Laramie River Units.

The Laramie River Station is in Platte County, Wyoming, and is comprised of three 550 megawatt (MW) dry-bottom, wall-fired boilers (Units 1, 2 and 3) burning subbituminous coal for a total net generating capacity of 1,650 MW. All three units are within the statutory definition of BART-eligible units and were determined to be subject to BART by Wyoming.

Basin Electric, the State of Wyoming, and others challenged the final rule. Basin Electric and Wyoming challenged our action as it pertained to the NO_x BART emission limits for

or scattering characteristic of each pollutant specie and adjustment for relative humidity. The deciview is "an atmospheric haze index that expresses changes in visibility" and "is like the decibel scale for sound" because it "represents a common change in perception." 64 FR at 35725.

³⁶ Final Report, p. 3-1 – 3-3.

³⁷ Final Report, p. 4-1 – 4-5.

³⁸ 79 FR 5032 (January 30, 2014).

Laramie River Units 1, 2 and 3.³⁹ After mediated discussions through the U.S. Court of Appeals for the Tenth Circuit's Mediation Office, Basin Electric, Wyoming and the EPA reached a settlement in 2017 that, if fully implemented, would address all of Basin Electric's challenges to the 2014 final rule and Wyoming's challenges to the portion of the 2014 final rule regarding NO_x BART emission limits for Laramie River Units 1, 2 and 3.^{40, 41}

The settlement agreement required the EPA to propose a FIP revision to include three major items:

- First, an alternative (BART alternative) to the NO_x BART emission limits in the EPA's 2014 FIP that includes:
 - Revised NO_x emission limits for Laramie River Units 2 and 3 of 0.15 lb/MMBtu (30-day rolling average) commencing December 31, 2018, with an interim limit of 0.18 lb/MMBtu (30-day rolling average) commencing the date that the EPA's final revised FIP becomes effective and ending December 31, 2018; and
 - A new SO₂ emission limit for Laramie River Units 1 and 2 of 0.12 lb/MMBtu (annual) averaged annually across the two units commencing December 31, 2018.
- Second, a revised NO_x emission limit for Laramie River Unit 1 of 0.06 lb/MMBtu on a 30-day rolling average commencing July 1, 2019, with an interim limit of

³⁹ *Basin Electric Cooperative v. EPA*, No. 14-9533 (10th Cir. March 31, 2014) and *Wyoming v. EPA*, No. 14-9529 (10th Cir. March 28, 2014).

⁴⁰ 81 FR 96450 (December 30, 2016).

⁴¹ Settlement Agreement.

0.18 lb/MMBtu on a 30-day rolling average commencing the date that the EPA's final revised FIP becomes effective and ending June 30, 2019.⁴²

- Third, installation of SCR on Laramie River Unit 1 by July 1, 2019, (thereby revising the compliance date of the existing FIP) and installation of SNCR on Units 2 and 3 by December 30, 2018.

In accordance with other terms of the 2017 settlement, Wyoming submitted a SIP revision to the EPA on April 5, 2018, to revise the SO₂ annual reporting requirements for Laramie River Units 1 and 2 as they pertain to the backstop trading program under 40 CFR 51.309. Specifically, Wyoming determined that Basin Electric must use SO₂ emission rates of 0.159 lb/MMBtu for Laramie River Unit 1 and 0.162 lb/MMBtu for Laramie River Unit 2 and multiply those rates by the actual annual heat input during the year for each unit to calculate and report emissions under the SO₂ backstop trading program. The revisions ensure that the SO₂ emissions reductions that are part of the BART alternative for Units 1 and 2 are not double-counted as reductions under the backstop trading program.

III. Public Comments and EPA Responses

We received seven comment submissions during the public comment period. After reviewing the comments, the EPA determined that four of the comments are outside the scope of our proposed action and fail to identify any material issue necessitating a response. One of the comments was a request to extend the comment period.⁴³ The remaining two comment letters –

⁴² These limits were voluntarily requested by Basin Electric.

⁴³ In response to the request, the EPA decided to extend the comment period for the proposed rule until December 10, 2018; 83 FR 55656 (November 7, 2018).

one from the National Parks Conservation Association, Powder River Basin Resource Council, Sierra Club, and Wyoming Outdoor Council (submitted collectively as the “Conservation Organizations”) and one from Basin Electric Power Cooperative – are summarized below with our responses.

According to the Conservation Organizations, the EPA failed to demonstrate that the BART alternative will achieve greater reasonable progress toward eliminating visibility impairment than would the implementation of BART and, as a result, the EPA may not finalize its proposed FIP revision for the following reasons:⁴⁴

Comment: The Conservation Organizations argue that the EPA’s modeling is based on NO_x emission rates that underestimate the visibility benefits of BART and overestimate the visibility benefits of the BART alternative. More specifically, the commenters argue, the EPA incorporated an inflated NO_x emission rate for SCR in the BART scenario while failing to justify a low NO_x emission rate for SNCR in the BART alternative, thereby biasing the analysis in favor of the BART alternative. According to the commenters, the comparison of the two scenarios must use a rational assessment of the emissions rates achievable with the controls constituting “the best system of continuous emission control technology available” for the relevant source(s), (i.e., the BART benchmark and the BART alternative).⁴⁵ The EPA failed to conduct a rational assessment, the Conservation Organizations argue, when the EPA assumed SCR could achieve a controlled NO_x annual emission rate of 0.05 lb/MMBtu when determining the BART scenario but using a controlled NO_x annual emission rate of 0.04 lb/MMBtu under the BART alternative

⁴⁴ See 40 CFR 51.308(e).

⁴⁵ 40 CFR 51.308(e)(2)(i)(C) and (D).

scenario thereby appearing to underestimate the visibility benefits of SCR in the BART benchmark.⁴⁶ Likewise, according to the commenters, the EPA failed to justify its assumption for the BART alternative NO_x emission rate of 0.128 lb/MMBtu at Units 2 and 3 based on the operation of SNCR thereby appearing to overestimate the visibility benefits of the BART alternative. Specifically, it is not reasonable, according to the commenters, to apply the same percentage reduction from the NO_x baseline emissions of 0.16 lb/MMBtu (as assumed for the proposed FIP revision) and 0.19 lb/MMBtu (as assumed in the 2014 FIP), because the control effectiveness of SNCR declines as baseline emission rates are reduced. Moreover, high furnace temperatures at Laramie River Station will further limit the possible NO_x reduction.⁴⁷

Response: We disagree with the commenters' assertion that the EPA's modeling is based on NO_x emission rates that underestimate the visibility benefits of BART and overestimate the visibility benefits of the BART alternative. We also disagree that our selection of NO_x emission rates biased the analysis in favor of the BART alternative.

Regarding the NO_x emission rate achievable with SCR, we disagree that we incorporated an inflated NO_x emission rate or an "apples-to-oranges" comparison in the BART scenario. Instead, we used the emission limits that would be enforceable under the BART and BART alternative scenarios, respectively. For the BART scenario, we used the NO_x emission limit of 0.07 lb/MMBtu (30-day rolling average) which we determined to be BART in our 2014 FIP,

⁴⁶ *Laramie River Station Power Plant Visibility Impacts for Two Emissions Control Scenarios: Final Report*. AECOM. p. 3-4 – 3-5, (May 2016).

⁴⁷ 79 FR 5160 (January 30, 2014).

reflecting the installation and operation of SCR.^{48,49,50} For the BART alternative scenario, we used the enforceable NO_x emission limit of 0.06 lb/MMBtu (30-day rolling average) that Basin Electric voluntarily agreed to for Unit 1 as part of the settlement agreement.⁵¹ While the 0.06 lb/MMBtu NO_x limit for Unit 1 is not a component of the BART alternative, it is part of the package of revised emission limits that is now being considered as a replacement for the 2014 BART determinations. In order to meet the 0.06 lb/MMBtu (30-day) limit, Basin Electric will incur additional costs that were not included in the 2014 FIP's BART determination.⁵² We are unaware of any provision of the CAA or RHR that would prevent a source from voluntarily requesting, and subsequently being required to comply with, a more stringent enforceable emission rate than prescribed under BART, as is the case here.

Regarding the NO_x emission rate achievable with SNCR, we disagree that we failed to justify our assumption that SNCR can achieve an emission rate of 0.128 lb/MMBtu (annual) at

⁴⁸ 83 FR 51407 (October 11, 2018), 79 FR 5039 (January 30, 2014). 40 CFR pt. 51, app. Y: IV, V (BART determinations and enforceable limits); 40 CFR 51.308(e)(3) (BART determinations).

⁴⁹ Shortly after publication of our FIP, various parties filed petitions for review of EPA's final action in the U.S. Court of Appeals for the Tenth Circuit Order (*Wyoming v. EPA*, No. 14-9529 and consolidated cases). Upon the motions of various petitioners, the Court ordered several provisions stayed pending completion of its review. The Court issued its order on September 9, 2014 (Doc. 01019307361), which stayed the emission limits for the Laramie River Station Units 1, 2 and 3.

⁵⁰ On an annual basis, the 30-day rolling average emission limit of 0.07 lb/MMBtu corresponded to an actual emission rate of 0.05 lb/MMBtu which is the emission rate referenced by the commenters in their comment. Regarding the relationship between 30-day emission limits and annual emission rates, refer to the 2014 final rule which states: when establishing a 30-day emission limit for SCR, the annual rate must be adjusted upward to account for: (1) A margin for compliance, (2) a shorter averaging period, and (3) start-up and shutdown emissions. 79 FR 5167 (January 30, 2014). See also 84 FR 10433 (March 21, 2019).

⁵¹ In accordance with the relationship between 30-day emission limits and annual emission rates (see 79 FR 5167, January 30, 2014), the EPA assumed that the 30-day rolling average emission limit of 0.06 lb/MMBtu corresponds to an annual emission rate of 0.04 lb/MMBtu which is the emission rate referenced by the commenters in their comment.

⁵² Costs are one of the five factors taken into account when determining BART.

Units 2 and 3.⁵³ As noted in the modeling protocol underlying the BART alternative, the annual emission rate of 0.128 lb/MMBtu is derived from the baseline annual emission rate of 0.16 lb/MMBtu multiplied by an assumed 20 percent reduction with SNCR (i.e., $0.16 \text{ lb/MMBtu} \times [1 - 20\%/100\%] = 0.128 \text{ lb/MMBtu}$).⁵⁴ As the EPA recognized in our 2014 FIP and we continue to recognize now, “the effectiveness of SNCR is highly dependent upon the characteristics of each boiler, and those characteristics include furnace temperature, furnace carbon monoxide (CO) concentration, NO_x level and other factors, but furnace temperature, CO concentration, and NO_x level are most important.”⁵⁵ Therefore, it is difficult to predict the *exact* percent reduction in NO_x that can be achieved by SNCR at a given boiler. Accordingly, in support of the 2014 FIP we used an approximation of the NO_x reduction achievable based on the NO_x inlet concentration given as a range: 30 percent for NO_x greater than 0.25 lb/MMBtu, 25 percent for NO_x between 0.20 and 0.25 lb/MMBtu, and 20 percent for NO_x under 0.20 lb/MMBtu.^{56, 57} Thus, the assumption that SNCR can reduce NO_x by 20 percent when baseline NO_x emissions are under 0.20 lb/MMBtu – whether at a baseline of 0.19 lb/MMBtu or 0.16 lb/MMBtu – is consistent with our 2014 FIP. Put more simply, we do not expect any meaningful difference in the control effectiveness of SNCR between an inlet NO_x emission rate of 0.19 lb/MMBtu and 0.16 lb/MMBtu. Moreover, the assumption that SNCR can reduce NO_x by 20 percent from an annual baseline of 0.16 lb/MMBtu

⁵³ 83 FR 51403 (October 11, 2018), 79 FR 5032 (January 30, 2014). 40 CFR pt. 51, app. Y ¶ IV, V (BART determinations and enforceable limits); 40 CFR 51.308(e)(3)(BART determinations).

⁵⁴ *Photochemical Modeling Protocol for the Visibility Assessment of Basin Electric Laramie River Power Plant*, and references, p. 5-1 – 5-2, (Protocol). Prepared for Basin Electric, AECOM, p. 2–4, (September 2015).

⁵⁵ 79 FR 5159 (January 30, 2014).

⁵⁶ *Cost of NO_x Controls on Wyoming EGUs*. Andover Technology Partners. p. 4 (October 28, 2013).

⁵⁷ The EPA provided further justification for the assumed percent reductions when responding to comments in the 2014 FIP. See 79 FR 5159-5161 (January 30, 2014).

is consistent with the updated chapter of the EPA's Control Cost Manual (CCM) for SNCR.⁵⁸

Based on observed data taken from utility boilers equipped with SNCR, Figure 1.1c of the SNCR chapter shows a relationship between the inlet NO_x emissions (x; lb/MMBtu) and the NO_x reduction (y; %) of $y=22.554x+16.725$.⁵⁹ For a baseline emission rate of 0.16 lb/MMBtu, the CCM equation yields an estimated NO_x reduction of 20.3 percent, which is nearly identical to our assumed reduction of 20 percent.

In our 2014 FIP, we also addressed the impact of furnace temperature on the effectiveness of SNCR. We concluded that the high furnace temperatures would have a negative impact on reagent utilization,⁶⁰ we maintained that a 20 percent reduction in NO_x would be achievable.⁶¹ Here again, the commenter has not provided any new information or analysis that would support a different conclusion regarding high furnace temperatures, and we are not aware of any such information.

In turn, the baseline annual emission rate of 0.16 lb/MMBtu is based on actual emissions data taken from the EPA's Clean Air Markets Division database for calendar year 2014, the most recent calendar year for which emissions data was available when the modeling protocol for the BART alternative was developed in 2015.⁶² Finally, we are neither aware of any new information nor has the commenter provided any new information or analysis that would support a different conclusion regarding the annual emission rate achievable with SNCR.

⁵⁸ EPA Control Cost Manual, Section 4, Chapter 1, Selective Noncatalytic Reduction. (May 2016).

⁵⁹ Figure 1.1c shows significant scatter in data points yielding a trend line with an r-squared value of 0.46 (based on simple linear regression). This reinforces the observation that the effectiveness of SNCR is highly dependent upon the characteristics of each boiler and is therefore difficult to predict with a high degree of accuracy.

⁶⁰ Reagent utilization is the ratio of moles of reagent reacted to the moles injected.

⁶¹ 79 FR 5159–5161 (January 30, 2014).

⁶² Air Markets Program Data. <https://ampd.epa.gov/ampd/>.

Accordingly, and in consideration of the points we make above, we find that we have provided a rational assessment of the emissions rates achievable with SCR and SNCR control technologies for both the BART and BART alternative scenarios.

Comment: The Conservation Organizations argue that the EPA used an outdated and unrepresentative temporal allocation of Laramie River Station's SO₂ and NO_x emissions, which they assert may underestimate the plant's impacts in summer and winter months. Specifically, the modeling protocol allocated total annual emissions based on a fairly constant level of operations without seasonality. However, the commenters assert the data available in the EPA's Clean Air Markets Division database show SO₂ and NO_x emissions since January 2015 exhibit strong seasonality. By neglecting to reflect this changing temporal emissions profile, the modeling fails to accurately project visibility impacts, according to the commenters, and therefore the EPA lacks a basis to determine that the BART alternative is better than BART. Additionally, the commenters' assert that AECOM inexplicably projected future year (2020) emissions using the 2007 National Emission Inventory (NEI), Modeling Protocol, at 2-11, rather than the more current 2011 NEI. The EPA must explain whether the use of an outdated emissions inventory may have impacted AECOM's modeling results.

Response: We disagree. As noted previously, the CAMx modeling leveraged the 3SAQS⁶³ as the starting point to assess visibility impacts from Laramie River Station. The 3SAQS developed a base year modeling platform for the year 2008 that was in turn used in the CAMx modeling for Laramie River Station. Emissions for all sources are the same in the 3SAQS

⁶³ ENVIRON. 2014. Three-State Air Quality Modeling Study (3SAQS). Final Modeling Protocol 2008 Emissions and Air Quality Modeling Platform. ENVIRON International Corporation, Novato, California (April 2014).

2008 study, except for Laramie River Station emissions. The modeling uses annual average 2001-2003 emissions for two reasons.⁶⁴ First, using 2001-2003 annual emissions provides consistency with the baseline emissions used in the CALPUFF modeling when establishing BART in the 2014 FIP. Second, it allows the modeling to show the visibility benefits of all NO_x and SO₂ reductions that have or will occur between 2001-2003 and the future modeled year of 2020. In turn, the temporal profile is taken from the same years as the annual emissions (2001-2003) as it is intended to reflect temporal variation in daily emissions during that time. It would not be logical to apply a temporal profile reflective of 2015-2018 emissions data for the years 2001-2003 as the commenter proposes. Furthermore, as a practical matter, the 2015-2018 emissions data referenced by the commenter was not available when AECOM began development of the CAMX protocol in 2014, and so could not have been used to establish the temporal profile for Laramie River Station.

Regarding the year of the NEI used to project emissions to the future year of 2020, the initial 3SAQS platform used a base year of 2008, which was in turn the basis of the CAMx modeling.⁶⁵ A subsequent 3SAQS platform, using a base year of 2011 with 2011 NEI data, was developed. However, the 2011 3SAQS modeling platform was not yet available when AECOM

⁶⁴ *Air Quality Modeling Protocol: Wyoming Regional Haze Federal Implementation Plan*, U.S. EPA, p. 6 (January 2014) and *BART Air Modeling Protocol, Individual Source Visibility Assessments for BART Control Analyses*, p. 7 (September 2006).

⁶⁵ Use of the most recent NEI is consistent with the EPA's SIP inventory guidance. "Draft Emissions Inventory Guidance for Implementation of Ozone [and Particulate Matter] National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations," (April 11, 2014)(2014 Draft Emissions Inventory Guidance"), pp. 13, 38 (which similarly requires use of the most current emission for regional haze reporting purposes).

began preparation of the CAMx modeling protocol in 2014.⁶⁶ Even still, for the reasons stated above, actual annual emissions from 2001-2003 were used for Laramie River Station. As such, the question of whether future year emissions were projected from the 2007 or 2011 NEI is relevant only to other sources included in the modeling, and the same emissions for the other sources were used in all three scenarios. Therefore, any errors in the emissions from other sources were mitigated by the fact that the CAMx results were used to compare the relative visibility improvements in BART and the BART alternative.

Finally, even if the EPA had used a more recent temporal profile or emissions inventory as suggested by the commenters, the commenters do not provide any evidence or analysis to support a conclusion that doing so would alter the outcome of the analysis (i.e., that the BART alternative achieves greater reasonable progress).

Comment: Third, the commenters state that, for the reasons summarized below and detailed in a memorandum submitted with their comments,⁶⁷ the results from the EPA's Comprehensive Air Quality Model with Extensions (CAMx) modeling do not rationally support the EPA's proposed determination that the BART alternative would achieve greater reasonable progress than BART:

- the Badlands National Park experiences the greatest visibility impact from Laramie River Station emissions of all modeled Class I areas and would suffer adverse visibility impacts from the implementation of the BART alternative when

⁶⁶ Memorandum from Intermountain West Data Warehouse – Western Air Quality Study Oversight Committee, Recommendations on the Use of the Intermountain West Data Warehouse for Air Quality 2011b Model Platform (May 17, 2016).

⁶⁷ Gebhart, Howard D. *Technical Comments – Laramie River Station CAMx BART Modeling Expert Report* (November 30, 2018).

compared to BART. Other modeled Class I areas up to or exceeding 500 kilometers (km) away offset the negative impact of the BART alternative on visibility in Badlands National Park.

- the CAMx modeling software lacks the necessary precision to make accurate concentration predictions when the sulfate concentrations are so small (on the order of 10^{-4} to 10^{-5} micrograms per cubic meter). While the model will produce a numerical value at this scale, the EPA's use of those values as precise measurements of sulfate concentrations under the modeled scenario is out of step with accepted protocols in the field of air dispersion modeling and fails to account for the inherent uncertainty in the model. Thus, the visibility benefit claimed for the BART alternative is not supportable.
- the results of the EPA's modeling⁶⁸ indicating measurable visibility impacts at the Yellowstone-region Class I areas because of the BART alternative are inconsistent with published data on pollutant trajectories that show sources in eastern Wyoming, where Laramie River Station is located, influence visibility in the western Wyoming Yellowstone area only once in approximately every 3 years.⁶⁹ Furthermore, the back-trajectories indicate that on the rare days when emissions would reach the Yellowstone region, they would first pass through and impact the Bridger and Fitzpatrick wilderness areas; yet on the days when the

⁶⁸ *Laramie River Station Power Plant Visibility Impacts for Two Emissions Control Scenarios: Final Report*, and references, p. 6-1 – 6-2, AECOM, (May 2016).

⁶⁹ Gebhart, Howard D. *Technical Comments – Laramie River Station CAMx BART Modeling Expert Report* (November 30, 2018).

AECOM 2016 modeled visibility impacts at Yellowstone, it modeled zero impact at Bridger/Fitzpatrick.

Response: We disagree with the commenters' assertion that the CAMx modeling results do not support the EPA's proposed determination that the BART alternative would achieve greater reasonable progress than BART.

First, with respect to the commenters' assertions regarding the inclusion of Class I areas up to or exceeding 500 km, the inclusion of these Class I areas is consistent with previous analysis using CAMx simulations.⁷⁰ Whereas CALPUFF simulations have often been limited to 300 km (unless further considerations are taken into account in evaluating that modeling), due to the increasing potential for model error across long distances, CAMx more readily allows for the inclusion of more distant Class I areas.⁷¹ Furthermore, while we recognize that visibility impact

⁷⁰ 81 FR 66332 (September 27, 2016), 77 FR 33642 (June 7, 2012). Indeed, as explained on the CAMx website, since 1996, CAMx has been employed extensively by local, state, regional and federal government agencies, academic and research institutions, and private consultants for regulatory assessments and general research throughout the U.S. and the world. CAMx has been used in more than 20 countries on nearly every continent. <http://www.camx.com/about/us-camx-applications.aspx>. Many of these applications have been under the Clean Air Act (*Regional Haze/U.S. Regional Planning Organizations (RPOs)*: Midwest (MRPO); Western (WRAP/WestJump); Central (CENRAP); Southeast (VISTAS); Oregon/Washington (Columbia River Gorge); *BART Modeling*: Texas BART screening analysis, Arkansas cumulative BART modeling; *1-Hour Ozone*: OTAG, NO_x SIP Call (eastern U.S.), Texas (SIPs for Houston, Dallas-Fort Worth, East Texas), Paso/Juarez trans-border analysis, LADCO (Great Lakes region), Pennsylvania (SIP for Pittsburgh); *8-Hour Ozone*: Texas (Houston, Dallas-Ft Worth, San Antonio, Austin, East Texas, Waco), Oklahoma (Oklahoma City, Tulsa), Colorado (Denver), New Mexico, Missouri/Illinois (St. Louis), LADCO (Great Lakes region), Florida (Tampa, Orlando, Jacksonville), Arizona (Phoenix), Southern California (Los Angeles), Louisiana (Baton Rouge), Central California (CCOS); *Local PM*: Pennsylvania (Allegheny County, PM_{2.5}), Utah (Salt Lake City, PM_{2.5}), LADCO (Great Lakes region, PM_{2.5}), Missouri/Illinois (St. Louis PM_{2.5} SIP), Idaho (Boise PM₁₀ SIP), Southern California (Los Angeles PM₁₀, PM_{2.5}); *Regional Strategies*: 2001 EPA analysis of Heavy-Duty Diesel Rule, (Eastern U.S.), 2005 EPA analysis of Clean Air Interstate Rule (Eastern U.S.), 2010 EPA analysis of Interstate Transport Rule (Eastern U.S.), 2010 EPA ozone non-attainment area designation modeling (national), 2014 EPA ozone NAAQS proposal PA/RIA (national), where the modeling domains were similar in size to the one used here, and much larger in size, covering an entire region of the U.S. or all of the U.S.

⁷¹ 77 FR 33642 (June 7, 2012) and Technical Support Document for Demonstration of the Transport Rule as a BART Alternative (December 2011). See CAMx User's Guide, for example, p. 1-2 (wide regional domain), 6-2 (Figure 6.1, map of the Eastern U.S. showing regional modeling domain).

at Badlands National Park under the BART alternative scenario (0.0138 deciviews) was greater than the impact under the BART scenario (0.0131 deciviews) on the 20 percent best days,⁷² the regional haze regulations do not require greater visibility improvements at every Class I area when comparing the BART alternative to BART. Instead, the regulations require that (1) visibility does not decline in any Class I area,⁷³ and (2) there is an overall improvement in visibility, determined by comparing the average differences between BART and the BART alternative over all affected Class I areas. Consistent with regulations, we determined that none of the Class I areas experienced a decline in visibility from the baseline under the BART alternative scenario, and there was a greater improvement in visibility under the BART alternative compared to BART averaged over all affected areas.⁷⁴

Second, with respect to the commenters' concerns regarding the precision of the CAMx modeling software, CAMx has a scientifically current treatment of chemistry to simulate transformation of emissions into visibility-impairing particles and its use for modeling cumulative air quality impacts in the U.S., including for regional haze SIPs, is well-established; CAMx has been used in several previous EPA assessments for evaluating greater reasonable progress.⁷⁵ While we agree with the commenters that modeling uncertainties such as correctly

⁷² 83 FR 51410 (October 11, 2018), Table 6.

⁷³ Contrary to commenters' assertion that the modeling results for Badlands National Park suggest the results do not show the BART alternative is better than BART, the visibility at Badlands National Park does not decline under the BART alternative scenario on the 20 percent worst days: compare visibility impacts for BART alternative scenario (0.0176 deciviews) and BART scenario (0.0177 deciviews).

⁷⁴ 83 FR 51410 (October 11, 2018), Table 6 and Table 7.

⁷⁵ 82 FR 46903 (October 10, 2017) (Final action for the Coronado Generating Station in the Regional Haze Plan for Arizona, BART alternative better than BART); 81 FR 296 (January 5, 2016) (Final action for Texas and Oklahoma Regional Haze Plans where for Texas CAMx source apportionment modeling was performed to determine which, if any, of the facilities had significant impacts.) 77 FR 33642 (June 7, 2012) (Final action for the Cross-State Air Pollution Rule (CSAPR) as a BART alternative.).

simulating the meteorological data fields are inherent to all air quality models and are not unique to CAMx,⁷⁶ we disagree that the visibility improvements associated with either the BART alternative or the BART scenario are not supportable due to these inherent and unavoidable uncertainties. The only changes among the modeling scenarios was due to different emission rates for the Laramie River Station. The uncertainties inherent in the model apply to both the BART and the BART alternative, and thus, while there is some uncertainty in the absolute visibility impacts and benefits, our use of CAMx here provides an accurate assessment of the relative improvement expected from two different control scenarios and whether the BART alternative is better than BART. Additionally, while commenters suggest the concentrations are out of step with accepted protocols, they fail to cite a specific protocol.

Indeed, given the highly complex nature of predicting how chemicals combine in the atmosphere and impact visibility, it is not surprising that the CAMx model performance is not completely precise and accurate. Comments with regard to CAMx precision and accuracy have been addressed in previous applications of CAMx for evaluating regional haze in FIPs and in SIPs.⁷⁷ Consistent with those applications of CAMx and the EPA's regulations and guidance, the CAMx modeling performed for this action used several approaches that specifically address concerns about precision and accuracy:

- CAMx modeled concentration results were processed in order to isolate the changes to visibility conditions as a result of emissions controls applied to the

⁷⁶ Gebhart, Howard D. *Technical Comments – Laramie River Station CAMx BART Modeling Expert Report* (November 30, 2018).

⁷⁷ 82 FR 46903 (October 10, 2017).

Laramie River Station.⁷⁸ To convert model concentrations into visibility estimates and account for quantifiable model bias, the EPA's Modeled Attainment Test Software (MATS) is used.⁷⁹ MATS is primarily intended as a tool to implement modeling for several CAA programs, including visibility for regional haze.⁸⁰ The use of MATS also helps mitigate model bias by pairing model estimates with actual measured conditions and adjusts the model predictions based on the measured concentrations.⁸¹

- The CAMx Particulate Source Apportionment Technology (PSAT), one of the extension tools in CAMx,⁸² was used in conjunction with MATS to isolate Laramie River Station's visibility impacts for each of the three modeled scenarios.⁸³ PSAT was used in the modeling analysis to tag and track the chemical transformations and transport of particulate matter (PM) precursor emissions from the Laramie River Station within the modeling domain, which is useful to understand model performance.⁸⁴ PSAT was used for each of three scenarios to track and account for particulate matter concentrations that originate or are formed as a result of emissions from Laramie River Station.⁸⁵ This approach substantially reduces the model numerical errors (sometimes referred to as

⁷⁸ Final Report, p. ES-1.

⁷⁹ *Modeled Attainment Test Software User's Manual*. Abt Associates for EPA (April 2014). (MATS User's Manual) https://www3.epa.gov/ttn/scram/guidance/guide/MATS_2-6-1_manual.pdf.

⁸⁰ MATS User's Manual, p. 9.

⁸¹ Final Report, p. 4-1, ES-2.

⁸² CAMx Users Guide, p. 1-4.

⁸³ Final Report, p. ES-2.

⁸⁴ *Ibid.* p. 7-1.

⁸⁵ Final Report, p. 5-1.

“artifacts” associated with very small modeled pollutant concentrations) in the estimates of visibility impairment caused by the Laramie River Station and improves the precision in the model estimates of visibility benefits. As explained in the Appendix to the Final Report, AECOM also evaluated modeling artifacts and based on several factors determined that the PSAT analysis was not affected by modeling artifacts and thus could be appropriately used in assessing the merits of the scenarios.⁸⁶ The PSAT configuration setup used the following tracers: sulfur (sulfate tracers), nitrogen (nitrate and ammonium tracers) and primary PM (elemental carbon, organic aerosol, crustal PM tracers).⁸⁷ The results of the CAMx PSAT analysis are described in detail in the supporting documentation.⁸⁸

- Concerns about model accuracy and bias are further addressed in the modeling analysis by using the scaling factors called RRF to correct model results for bias.⁸⁹ In the RRF approach, the impacts of each emissions control scenario on sulfate and nitrate are estimated by multiplying the model percent change in sulfate and nitrate in each control strategy simulation by the measured concentrations of sulfate and nitrate at the Class I areas.⁹⁰ This is the same

⁸⁶ Appendix A to Final Report.

⁸⁷ Protocol p. 3-7.

⁸⁸ *Laramie River Station Power Plant Visibility Impacts for Two Emissions Control Scenarios: Final Report* Prepared for Basin Electric, AECOM (May 2016), and letter from Holland and Hart regarding modeling explanation.

⁸⁹ *Photochemical Modeling Protocol for the Visibility Assessment of Basin Electric Laramie River Power Plant*. (Protocol). Prepared for Basin Electric, AECOM, p. 4-3 (September 2015).

⁹⁰ *Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze*, EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC, p. 95-96. (December 3, 2014) and *Modeling Guidance for Demonstrating Air Quality Goals for Ozone, PM_{2.5} and Regional Haze*. EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC (November 29, 2018).

approach that is used in all regulatory applications of CAMx for regional haze, ozone, and PM_{2.5} SIPs and FIPs.⁹¹

Additionally, both qualitative and quantitative model performance evaluations were performed to determine whether the meteorological fields were sufficiently accurate for the model to properly characterize the transport, chemistry, and removal processes. The model performance evaluation study concluded that the application exhibited reasonably good model performance that was as good or better than other recent prognostic model applications used in air quality planning.⁹² Finally, a number of quality assurance files were prepared and used to check for errors in the emission inputs.⁹³

While the CAMx PSAT, RRF and other methodologies do not fully eliminate all model error, these techniques do correct for errors and bias consistently for each emissions control scenario evaluated here, and this increases confidence that the model results are reliable in estimating greater relative benefits for the BART alternative scenario compared to the BART

⁹¹ *Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze*, EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC, p. 95-96. (December 3, 2014) and *Modeling Guidance for Demonstrating Air Quality Goals for Ozone, PM_{2.5} and Regional Haze*. EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC (November 29, 2018).

⁹² Protocol p. 3.1, summarizing and citing the findings in “Western Regional Air Partnership (WRAP) West-wide Jump Start Air Quality Modeling Study”, WRF Application/Evaluation, February 29, 2012 (ENVIRON and Alpine 2012)(https://www.wrapair2.org/pdf/WestJumpAQMS_2008_Annual_WRF_Final_Report_February29_2012.pdf). The modeling analysis for this final action used the modeling platform from the West-wide Jump Start Air Quality Modeling Study (WestJumpAQMS), and the model performance evaluation study concluded that the WestJumpAQMS application exhibited reasonably good model performance that was as good or better than other recent prognostic model applications used in air quality planning and it was therefore reasonable to proceed with their use as inputs for the WestJumpAQMS photochemical grid modeling. That study was conducted by the WRAP to develop a regional photochemical grid model (PGM) modeling platform for the western states. The WRAP intended that the PGM modeling platform would be used in several CAA applications, including visibility. Meteorological data are key inputs for CAMx photochemical grid modeling and these data include wind speed and direction, temperature, water vapor concentrations (mixing ratio), sunlight intensity, clouds and precipitation, and vertical mixing. For PGMs such meteorological inputs are generated using prognostic meteorological models that solve the fundamental equations of the atmosphere. p. ES1-ES2.

⁹³ Protocol p. 2-3 – 2-4 and Final report.

scenario. Additionally, the EPA's chosen visibility modeling need not be perfect, but only reasonable,⁹⁴ and it was reasonable to use the CAMx model, which is a satisfactory predictive tool, to ascertain whether it is more likely than not that the BART alternative is better than the BART scenario, information essential to inform the EPA's analysis and decision-making. Moreover, 40 CFR 51.308(e)(3) allows for a straight numerical test regardless of the magnitude of the computed differences and does not specify a minimum delta deciview difference between the modeled scenarios that must be achieved for a BART alternative to achieve greater reasonable progress than BART. Furthermore, the BART versus BART alternative visibility impacts presented here represent average impacts from two periods (the 20 percent best days and 20 percent worst days). Thus, some of the individual day impacts are much larger than reflected in the average and "measure" larger impacts than implied here.

Finally, we disagree with the commenters' statement that pollutant trajectories for air masses reaching the Yellowstone region are not accurately reflected in the modeling. The commenter claims that "[p]ublished back-trajectories list the frequency of transport for Laramie River Station emissions toward Yellowstone and nearby areas at essentially zero (less than one day every 3 years)" and argues that therefore, the CAMx modeling overestimates the benefits of any emissions control scenarios in the Yellowstone region. To support this claim, the commenter provided an extended abstract titled "Preliminary Back Trajectory Analysis of GrandTReNDS Reactive Nitrogen" that was presented at a 2014 Air & Waste Management Association

⁹⁴ See *WildEarth Guardians*, 770 F.3d 919, 931 (citing *San Luis & Delta-Mendota Water Auth. v. Jewell*, 747 F.3d 581, 620-21 (9th Cir. 2014) (upholding the use of EPA's approval of the SO₂ backstop trading program and that use of an imperfect analysis is not arbitrary or capricious).

conference. However, we find the extended abstract does not support the commenters' claims for several reasons. The commenters' extended abstract relied on mean 24-hour data, and the abstract concluded that "[s]trong diurnal patterns in the winds in this region mean 24-hour data are probably not adequate for source apportionment analyses"⁹⁵ and noted that the commenter intended to address this limitation by using 4 kilometer (km) resolution weather research and forecast (WRF) data that would be available in the future, which were both used in the CAMx modeling. Finally, we note that on page 13 of the extended abstract, the plots show relatively greater transport from eastern Wyoming to Yellowstone on the lowest concentration days at Yellowstone, which is consistent with the finding in the CAMx modeling that the Laramie River Station can contribute to visibility impairment on the best visibility days at Yellowstone.

Furthermore, the CAMx modeling uses the finer and more accurate 4 km resolution WRF meteorological modeling that was evaluated against surface meteorological observations of wind speed, wind direction, temperature and humidity.⁹⁶ Contrary to the commenters' assertions, the 4 km WRF CAMx modeling results indicate that there were days on which wind trajectories transported emissions from the Laramie River Station to the Yellowstone region.⁹⁷ Thus, we do

⁹⁵ *Preliminary Back Trajectory Analysis of GrandTREND's Reactive Nitrogen*. Gebhart, Kristi A., Prenni, Anthony J., Barna, Michael G., Schichtel, Bret A.; National Park Service and Malm, William C., Day, Derek E., Sullivan, Amy P., Levin, Ezra J.T., Collett Jr., Jeffrey L., Benedict, Katherine B.; Colorado State University. Air and Waste Management Association Annual Meeting. Extended Abstract #33458. (June 26, 2014).

⁹⁶ *Western Regional Air Partnership (WRAP) West-wide Jump Start Air Quality Modeling Study (WestJumpAQMS)*. ENVIRON International Corporation. (February 29, 2012).

⁹⁷ We evaluated the CAMx PSAT plots to identify days on which the model plume was transported from Laramie River Station to Class I areas in western Wyoming. Specifically, the model results showed that Laramie River Station impacted these Class I areas on the following days: May 23 – 28, June 30, July 26, August 5 – 8, August 16 – 18, August 23, September 8 – 9, October 11 – 12, November 21. See also plots of the CAMx PSAT modeling results in electronic and physical form in the docket # EPA-R08-OAR-2018-0606.

not find that there is adequate evidence to support the commenters' assertion that the Laramie River Station does not contribute to visibility impairment in the Yellowstone region.

Comment: Finally, the commenters argue that multiple features of the EPA's modeling exacerbate the uncertainty inherent in CAMx and compound the unreliability of the results on which the EPA relies upon in its BART alternative determination, including:⁹⁸

- the inherent inaccuracies of the CAMx model are multiplied at large transport distances, which further undermines the EPA's reliance on extremely small modeled visibility benefits and associated changes in pollutant concentrations to conclude that the BART alternative improves visibility at these locations;
- the EPA utilized modeled results from Yellowstone to quantify purported visibility benefits at multiple Class I areas that lack their own IMPROVE monitors, which further compounds the errors introduced by the Yellowstone results; and
- the use of the particulate source apportionment technology (PSAT) to track emissions in the EPA's modeling further compounded the unreliability of modeled visibility "benefits" arising from the BART alternative as PSAT has been shown to overestimate the true sulfate contribution assigned to individual emission sources. Accordingly, PSAT likely introduced "false positives" in the model results by modeling visibility impacts from changing emissions at Laramie River Station under the BART alternative that would not bear out in reality.

⁹⁸ Gebhart, Howard D. *Technical Comments – Laramie River Station CAMx BART Modeling Expert Report* (November 30, 2018).

Response: We disagree with the commenters' arguments that multiple features of our modeling, including large transport distances, lack of IMPROVE monitors, and the use of PSAT exacerbated the uncertainty inherent in CAMx and compounded the unreliability of the results on which we relied upon in our BART alternative determination. In fact, we utilized multiple tools, as discussed previously, to further evaluate the modeling results to determine whether the results represent "real" modeled visibility differences.

Specifically, it is true that in some geographic areas, single IMPROVE monitors represent multiple Class I areas, based on expected similarities between the airsheds (Figure 1). This approach is consistent with the EPA's Guidance for Tracking Progress Under the Regional Haze Rule that areas without a monitor are assigned a representative monitor,⁹⁹ and other requirements to include all Class I areas in the modeling domain.¹⁰⁰ Therefore, the Yellowstone IMPROVE monitor was used to represent several other Class I areas in the analysis. We note that the IMPROVE data from the nearby Class I area is used for the RRF correction for model bias for Class I areas that do not have a dedicated IMPROVE monitor. This nearby monitor approach is used by the EPA and states for all regulatory and planning requirements for Class I areas that lack IMPROVE monitors, and the estimates represent visibility improvements at these Class I areas.¹⁰¹ Furthermore, without data showing the monitors are not representative, we have no reason to find that this assumption should not apply.

⁹⁹ Appendix A, Table A-2 of *Guidance for Tracking Progress Under the Regional Haze Rule* (September 2003).

¹⁰⁰ 40 CFR 51.308(d)(2)(ii), (e)(3). 40 CFR pt. 51, app. Y: I.B, I.C.2, I.F.2.(c), IV.D.5. 2014 Guidance pp. 17-19.

¹⁰¹ 40 CFR 51.308(d)(2) (the regional haze rule provides that for Class I areas without onsite monitoring data, the state must establish baseline and assessment values using the most representative available monitoring data, in consultation with the Administrator or his or her designee). Also, consistent with the additional requirements in §51.308(d)(4), Wyoming's regional haze plan contains a *monitoring strategy* for measuring, characterizing, and

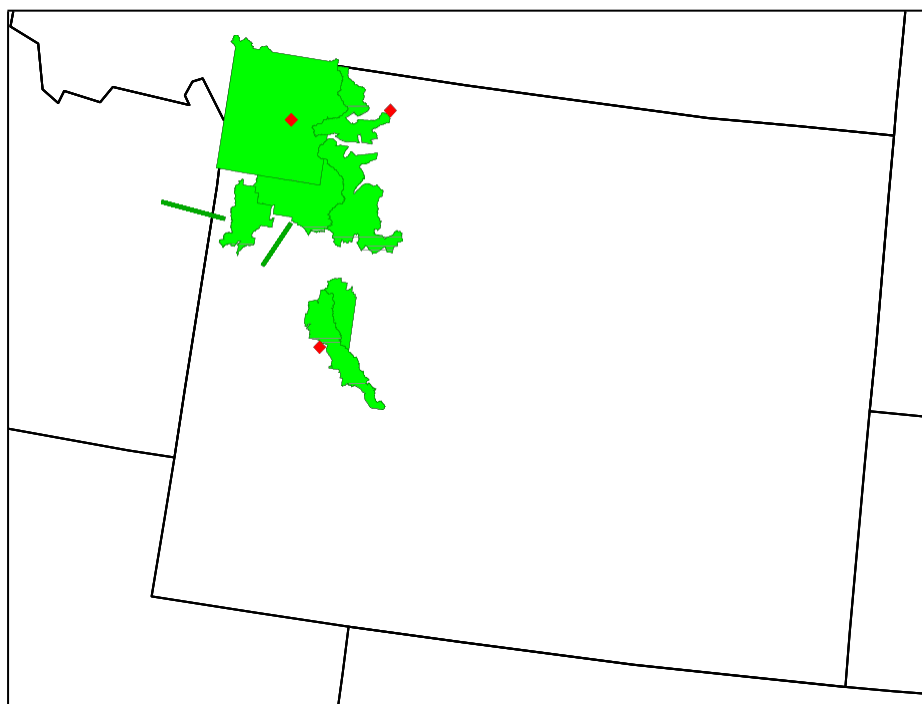


Figure 1. Map Depicting Federal Class I Areas and Representative IMPROVE Monitors in Wyoming.

reporting of regional haze visibility impairment that is *representative* of all mandatory Class I Federal areas within the State. Our 2012 proposed rule explained that Chapter 9 of the Wyoming regional haze SIP relies on the IMPROVE network for compliance purposes, in addition to any additional visibility impairment monitoring that may be needed in the future, 77 FR 33022, 33048 (June 4, 2012) (Wyoming 2011 SIP Submittal, Chapter 9, pp. 178-180, adopted by reference at 40 CFR 52.2620(e)(25) (Wyoming State Implementation Plan for Regional Haze for 309(g)). Specifically, as was done for the CAMx modeling for action, some Class I areas share a single monitor because of the proximity of the areas to each other: Bridger and Fitzpatrick are represented by the BRID1 monitor site; North Absaroka and Washakie are represented by the NOAB1 monitor site; and Yellowstone, Teton and Grand Teton are represented by the YELLO2 monitor. *Id.* at 33029. Finally, if commenters had concerns about the use of representative monitors, their opportunity to comment and challenge the EPA's action was prior to our final action on the State's 2011 SIP submittal. 79 FR 5032 (January 30, 2014) (EPA's final action on Wyoming's 2011 SIP submittal). The CAMx modeling protocol and Final Report are consistent with this approach, as it explains that the contractor used Table A-2 in Appendix A of EPA's Guidance for Tracking Progress Under the Regional Haze Rule (2003), which specifies the same representative sites. Final Report, p. 4-4.

We disagree with the comment that PSAT has been shown to overestimate the true sulfate contribution assigned to individual emission sources and that PSAT likely introduced “false positives” in the model results of impacts from changing emissions at Laramie. The commenter did not cite any specific sources or studies that PSAT can introduce false positives. Moreover, we note that PSAT was subject to testing and evaluation by the model developer,¹⁰² as well as for this particular application.¹⁰³ While the CAMx model and PSAT can at times be biased either high or low for sulfate, the model relative response factor approach, which has the effect of anchoring the future estimated visibility results to a “real” measured ambient value,¹⁰⁴ is used to help correct for model bias. Additionally, we note that any errors in the CAMx model will apply to both the BART and the BART alternative scenarios. Thus, the effects of any systematic errors in the model are mitigated by the fact that the CAMx and PSAT results are being used to compare the relative visibility improvements in the BART and BART alternative.

As supported by our preceding responses, it was reasonable for the EPA to: (1) use the CAMx modeling results as the basis for our determination; and (2) rely on the results of the CAMx model that predicted a visibility improvement associated with the BART alternative relative to BART.¹⁰⁵

¹⁰² CAMx User’s Guide, p. 7-7 – 7-12.

¹⁰³ Appendix A to Final Report.

¹⁰⁴ *Modeling Guidance for Demonstrating Attainment of Air Quality Goals for Ozone, PM_{2.5}, and Regional Haze*, EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC., p. 95-96 (December 3, 2014).

¹⁰⁵ Congress’ concern about modeling science led it to require the EPA to establish uniform modeling techniques and update the models periodically as modeling science develops. Due to the highly technical nature of the modeling techniques, the EPA’s modeling expertise makes it particularly well suited to apply and make determinations based on the results of the modeling analysis.

Our responses regarding the uncertainties associated with the CAMx model across large distances and “extremely small” modeled visibility benefits are found elsewhere in this document.

Finally, the commenters fail to provide an alternative analysis or basis demonstrating that any changes made to the commenters’ perceived uncertainties inherent in CAMx or otherwise would alter the outcome of the BART alternative analysis.

In addition to the conservation organizations’ comments, we also received several comments from Basin Electric:

Comment: First, the commenter stated that the EPA’s BART alternative, under the two-prong test found at 40 CFR 51.308(e)(3), results in greater reasonable progress and demonstrated compliance with each of the five elements of the BART alternative.¹⁰⁶ Specifically, the commenters agree with the EPA’s findings that the CAMx modeling demonstrated that emission reductions associated with the BART alternative in the proposed FIP revision will provide greater reasonable progress towards natural visibility conditions than the implementation of BART alone. Furthermore, reliance on the CAMx model, including the inclusion of Laramie River Unit 1 NO_x emissions, actual anticipated emissions, Modeled Attainment Test Software (MATS), and PSAT plots, was appropriate according to the commenter.

Response: For the reasons explained elsewhere in this action, we agree with the commenter’s assertion that, under the two-pronged test found at 40 CFR 51.308(e)(3), the BART

¹⁰⁶ 40 CFR 51.308(e)(2).

alternative results in greater reasonable progress than BART and complies with each of the five elements of the BART alternative.

Comment: Second, the commenter encouraged the EPA to consider, as part of its approval of the revised FIP, the factors set forth in the weight of evidence test under 40 CFR 51.308(e)(2)(i)(E), including: (1) earlier emission reductions, (2) reductions in SO₂ emissions, (3) additional NO_x emissions reductions at Unit 1, (4) overall greater reasonable progress, (5) greater visibility benefit with lower costs, and (6) avoidance of litigation risk.

Response: While we appreciate the commenters' encouragement to conduct an additional analysis, the regional haze rule requires the BART alternative to achieve greater reasonable progress under either: (1) a determination under 40 CFR 51.308(e)(3) based on greater emission reductions if the distribution of emissions is not substantially different than BART; (2) a determination under 40 CFR 51.308(e)(3) based on the use of dispersion modeling if the distribution of emissions is significantly different; or (3) a determination under 40 CFR 51.308(e)(2)(i)(E) based on the clear weight of evidence.¹⁰⁷ Thus, only one analysis is necessary to determine that the BART alternative achieves greater reasonable progress than BART.

Furthermore, we cannot, in fact, incorporate a new key analysis, such as a weight of evidence determination, into our final rulemaking without first introducing it through the public rulemaking process as part of a proposed rule.

Comment: Third, the commenter asserts that the regional haze regulations support consideration of costs in the determination of a BART alternative. Since under the CAA, a

¹⁰⁷ 40 CFR 51.308(e)(2)(i)(E).

BART determination must “take into consideration the cost of compliance” and a determination of reasonable progress toward achieving the national goal of improving visibility must “consider the cost of compliance,” so, too, should BART alternatives be predicated on consideration of compliance costs and any differential between the costs of BART and the costs of the BART alternative. Thus, the commenter encourages the EPA to consider that the BART alternative will achieve greater visibility benefits for less cost than BART.

Response: The EPA disagrees that we should perform a cost analysis of the BART alternative emission control strategy. While the cost of compliance is a factor under both the BART and reasonable progress analyses (CAA 169A(g)(2) and (1), respectively), the regulatory “greater reasonable progress” requirements for BART alternatives focus on whether an alternative will achieve greater visibility improvement than BART (*see* 40 CFR 51.308(e)(2)(i)). Specifically, the test on which the EPA is relying to demonstrate that the BART alternative here makes greater reasonable progress than BART (40 CFR 51.308(e)(3)) is based solely on visibility impacts of the alternative versus BART.

Comment: Finally, the commenter identifies an error to the NO_x emission reduction for Unit 1 found in Table 4 of the proposed rule. The NO_x emission reduction for Unit 1 in Table 4 is shown as 4,880 tons per year but should be 5,179 tons per year, as correctly reflected in the text, according to the commenter.

Response: While the modeled NO_x emissions reductions of 5,179 tons per year were correctly used in the modeling analysis,¹⁰⁸ we agree with the commenter that the NO_x emission reduction for Unit 1 in Table 4 of the proposed rule should read 5,179 tons per year as reflected in the text at the bottom of page 51408. We appreciate the commenter bringing this inadvertent error in the text of the proposed rule to our attention.

IV. Final Action

In this action, the EPA is finalizing approval of SIP amendments, shown in Table 1, to the Wyoming Air Quality Standards and Regulations, Chapter 14, *Emission Trading Program Regulations*, Section 3, *Sulfur dioxide milestone inventory*, revising the backstop trading program SO₂ emissions reporting requirements for Laramie River Units 1 and 2.

Table 1 - List of Wyoming Amendments that EPA Is Approving

Approved Amended Sections in April 5, 2018 Submittal
<u>Chapter 14, Section 3: (d), (e)</u>

We are also finalizing amendments to the Wyoming regional haze FIP contained in 40 CFR 52.2636 to remove the 2014 FIP's NO_x emission limits and instead incorporate the BART alternative and associated NO_x and SO₂ emission limits for Laramie River Units 1, 2 and 3, revise the NO_x emission limit for Unit 1, and add control technology requirements. Specifically, the EPA is revising the NO_x emission limits and control technologies for Laramie River Units 1, 2 and 3 and adding SO₂ emission limits for Laramie River Units 1 and 2 in Table 2 of 40 CFR 52.2636(c)(1). We are

¹⁰⁸ *Laramie River Station Power Plant Visibility Impacts for Two Emissions Control Scenarios: Final Report*. AECOM (May 2016).

also adding associated compliance dates in 40 CFR 52.2636(d)(4) for Laramie River Units 1, 2 and 3. Finally, we are referencing SO₂ in the following sections: *Applicability* (40 CFR 52.2636(a)); *Definitions* (40 CFR 52.2636(b)); *Compliance determinations for NO_x* (40 CFR 52.2636(e)); *Reporting* (40 CFR 52.2636(h)); and *Notifications* (40 CFR 52.2636(i)). We are not amending any other regulatory text in 40 CFR 52.2636.

Although we are finalizing revisions to the Wyoming regional haze FIP, Wyoming may always submit a new regional haze SIP to the EPA for review, and we would welcome such a submission. The CAA requires the EPA to act within 12 months on a SIP submittal from the time that it is determined to be complete. If Wyoming were to submit a SIP revision meeting the requirements of the CAA and the regional haze regulations, we would propose approval of the State's plan as expeditiously as practicable.

V. Incorporation by Reference

In this document, the EPA is finalizing regulatory text that includes incorporation by reference. In accordance with requirements of 1 CFR 51.5, the EPA is finalizing the incorporation by reference of the SIP amendments described in Section IV of this preamble. The EPA has made, and will continue to make, these materials generally available through www.regulations.gov and at the EPA Region 8 Office (please contact the person identified in the "For Further Information Contact" section of this preamble for more information). Therefore, these materials have been approved by the EPA for inclusion in the state implementation plan, have been incorporated by reference by the EPA into that plan, are fully federally enforceable under sections 110 and 113 of the CAA as of the effective date of the final rulemaking of the

EPA's approval, and will be incorporated by reference in the next update to the SIP compilation.¹⁰⁹

VI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

This action is not a “significant regulatory action” under the terms of Executive Order 12866¹¹⁰ and was therefore not submitted to the Office of Management and Budget (OMB) for review. This final rule revision applies to only one facility in the State of Wyoming. It is therefore not a rule of general applicability.

B. Executive Order 13771: Reducing Regulations and Controlling Regulatory Costs

This action is not an Executive Order 13771 regulatory action because this action is not significant under Executive Order 12866.

C. Paperwork Reduction Act

This action does not impose an information collection burden under the provisions of the Paperwork Reduction Act (PRA).¹¹¹ A “collection of information” under the PRA means the obtaining, causing to be obtained, soliciting, or requiring the disclosure to an agency, third parties or the public of information by or for an agency by means of identical questions posed to, or identical reporting, recordkeeping, or disclosure requirements imposed on, ten or more persons, whether such collection of information is mandatory, voluntary, or required to obtain or

¹⁰⁹ 62 FR 27968 (May 22, 1997).

¹¹⁰ 58 FR 51735, 51738 (October 4, 1993).

¹¹¹ 44 U.S.C. 3501 *et seq.*

retain a benefit.¹¹² Because this final rule revises the NO_x and SO₂ emission limits and associated reporting requirements for one facility, the PRA does not apply.

D. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations and small governmental jurisdictions.

For purposes of assessing the impacts of this rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of this final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This rule does not impose any requirements or create impacts on small entities as no small entities are subject to the requirements of this rule.

E. Unfunded Mandates Reform Act (UMRA)

¹¹² 5 CFR 1320.3(c).

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for federal agencies to assess the effects of their regulatory actions on state, local and tribal governments and the private sector. Under section 202 of UMRA, the EPA generally must prepare a written statement, including a cost-benefit analysis, for actions with “Federal mandates” that may result in expenditures to state, local and tribal governments, in the aggregate, or to the private sector, of \$100 million or more (adjusted for inflation) in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of UMRA generally requires the EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 of UMRA do not apply when they are inconsistent with applicable law. Moreover, section 205 of UMRA allows the EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before the EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory actions with significant federal intergovernmental mandates, and informing, educating and advising small governments on compliance with the regulatory requirements.

Under Title II of UMRA, the EPA has determined that this action does not contain a federal mandate that may result in expenditures that exceed the inflation-adjusted UMRA threshold of \$100 million¹¹³ by state, local or tribal governments or the private sector in any one year. The revisions to the 2014 FIP would reduce private sector expenditures. Additionally, we do not foresee significant costs (if any) for state and local governments. Thus, because the revisions to the 2014 FIP reduce annual expenditures, this final rule is not subject to the requirements of sections 202 or 205 of UMRA. This final rule is also not subject to the requirements of section 203 of UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments.

F. Executive Order 13132: Federalism

Executive Order 13132, *Federalism*,¹¹⁴ revokes and replaces Executive Orders 12612 (Federalism) and 12875 (Enhancing the Intergovernmental Partnership). Executive Order 13132 requires the EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.”¹¹⁵ “Policies that have federalism implications” is defined in the Executive Order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.”¹¹⁶ Under Executive Order 13132, the EPA may not issue a regulation “that has federalism implications, that imposes substantial direct

¹¹³ Adjusted to 2014 dollars, the UMRA threshold becomes \$152 million.

¹¹⁴ 64 FR 43255, 43255-43257 (August 10, 1999).

¹¹⁵ 64 FR 43255, 43257.

¹¹⁶ *Ibid.*

compliance costs, . . . and that is not required by statute, unless [the federal government provides the] funds necessary to pay the direct [compliance] costs incurred by the State and local governments,” or the EPA consults with state and local officials early in the process of developing the final regulation.¹¹⁷ The EPA also may not issue a regulation that has federalism implications and that preempts state law unless the agency consults with state and local officials early in the process of developing the final regulation.

This action does not have federalism implications. The FIP revisions will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Thus, Executive Order 13132 does not apply to this action.

G. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, entitled “Consultation and Coordination with Indian Tribal Governments,” requires the EPA to develop an accountable process to ensure “meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.”¹¹⁸ This final rule does not have tribal implications, as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments. Thus, Executive Order 13175 does not apply to this rule. However, the EPA did send letters to each of the Wyoming

¹¹⁷ *Ibid.*

¹¹⁸ 65 FR 67249, 67250 (November 9, 2000).

tribes explaining our regional haze proposed FIP revision and offering consultation; however, no tribe asked for consultation.¹¹⁹

H. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

This action is not subject to Executive Order 13045 (62 FR 19885, April 23, 1997). The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of “covered regulatory action” in section 2-202 of the executive order. This action is not subject to Executive Order 13045 because it does not concern an environmental health risk or safety risk.

I. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211 (66 FR 28355, May 22, 2001), because it is not a significant regulatory action under Executive Order 12866.

J. National Technology Transfer and Advancement Act

Section 12 of the National Technology Transfer and Advancement Act (NTTAA) of 1995 requires federal agencies to evaluate existing technical standards when developing a new regulation. Section 12(d) of NTTAA, Public Law 104-113, 12(d) (15 U.S.C. 272 note) directs the EPA to consider and use “voluntary consensus standards” in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus

¹¹⁹ Letters to tribal governments (September 5, 2018).

standards are technical standards (e.g., materials specifications, test methods, sampling procedures and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs the EPA to provide Congress, through OMB, explanations when the agency decides not to use available and applicable voluntary consensus standards.

This action involves technical standards. The EPA has decided to use the applicable monitoring requirements of 40 CFR part 75. Part 75 already incorporates a number of voluntary consensus standards. Consistent with the agency's Performance Based Measurement System (PBMS), part 75 sets forth performance criteria that allow the use of alternative methods to the ones set forth in part 75. The PBMS approach is intended to be more flexible and cost-effective for the regulated community; it is also intended to encourage innovation in analytical technology and improved data quality. At this time, the EPA is not recommending any revisions to part 75. However, the EPA periodically revises the test procedures set forth in part 75. When the EPA revises the test procedures set forth in part 75 in the future, the EPA will address the use of any new voluntary consensus standards that are equivalent. Currently, even if a test procedure is not set forth in part 75, the EPA is not precluding the use of any method, whether it constitutes a voluntary consensus standard or not, as long as it meets the performance criteria specified; however, any alternative methods must be approved through the petition process under 40 CFR 75.66 before they are used.

K. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 establishes federal executive policy on environmental justice.¹²⁰ Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies and activities on minority populations and low-income populations in the United States.

I certify that the approaches under this final rule will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous/tribal populations. As explained previously, the Wyoming Regional Haze FIP, as revised by this action, will result in a significant reduction in emissions compared to current levels. Although this revision will allow an increase in future emissions as compared to the 2014 FIP, the revisions to the FIP, as a whole, will still result in overall NO_x and SO₂ reductions compared to those currently allowed. In addition, the area where Laramie River Station is located has not been designated nonattainment for any NAAQS. Thus, the FIP will ensure a significant reduction in NO_x and SO₂ emissions compared to current levels and will not create a disproportionately high and adverse human health or environmental effect on minority, low-income, or indigenous/tribal populations.

L. Congressional Review Act (CRA)

This rule is exempt from the CRA because it is a rule of particular applicability.

M. Judicial Review

¹²⁰ 59 FR 7629 (February 16, 1994).

Under section 307(b)(1) of the CAA, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Pursuant to CAA section 307(d)(1)(B), this section is subject to the requirements of the CAA section 307(d) as it promulgates a FIP under CAA section 110(c). Filing a petition for reconsideration by the Administrator of this final rule does not affect the finality of this action for purposes of judicial review nor does it extend the time within which a petition for judicial review may be filed and shall not postpone the effectiveness of such rule or action. This action may not be challenged later in proceedings to enforce its requirements. See CAA section 307(b)(2).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Particulate matter, Sulfur oxides.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: May 6, 2019.

Andrew R. Wheeler,
Administrator.

40 CFR part 52 is amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 *et seq.*

Subpart ZZ—Wyoming

2. Section 52.2620 is amended by:

- a. In paragraph (c), revising the table entry for “Section 3” under the centered table heading “Chapter 14. Emission Trading Program Regulations.”; and
- b. In paragraph (e), revising the table entry for “(20) XX”.

The revisions read as follows:

§ 52.2620 Identification of plan.

* * * * *

(c) * * *

Rule No.	Rule title	State effective date	EPA Effective date	Final rule/citation date	Comments
* * * * *					
Chapter 14. Emission Trading Program Regulations.					
* * * * *					
Section 3	Sulfur dioxide milestone inventory	2/5/2018	[Insert date 30 days after date of publication in the Federal Register]	[Insert Federal Register citation], [Insert Federal Register date of publication]	
* * * * *					

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(e) * * *

Rule No.	Rule title	State effective date	EPA Effective date	Final rule/citation date	Comments
* * * * *					
(20) XX	Addressing Regional Haze Visibility Protection For The Mandatory Federal Class I Areas Required Under 40 CFR 51.309	4/5/2018	[Insert date 30 days after date of publication in the <u>Federal Register</u>]	[Insert <u>Federal Register</u> citation], [Insert <u>Federal Register</u> date of publication]	
* * * * *					

3. Section 52.2636 is amended by:

- a. Revising paragraphs (a)(2) and (b)(4) and (12);
- b. Adding paragraph (b)(13);
- c. Revising paragraph (c)(1) introductory text, Table 2, and paragraphs (d)(2) and (3);
- d. Adding paragraph (d)(4);
- e. Revising the heading for paragraph (e) and paragraphs (e)(1)(i) and (e)(1)(ii)(A) through (C);
- f. Adding paragraph (e)(1)(ii)(D); and
- g. Revising paragraphs (h)(1) and (i)(1).

The revisions and additions read as follows:

§ 52.2636 Implementation plan for regional haze.

(a) * * *

(2) This section also applies to each owner and operator of the following emissions units in the State of Wyoming for which the EPA disapproved the State's BART determination and issued a SO₂ and/or NO_x BART Federal Implementation Plan:

(i) Basin Electric Power Cooperative Laramie River Station Units 1, 2, and 3;

(ii) PacifiCorp Dave Johnston Unit 3; and

(iii) PacifiCorp Wyodak Power Plant Unit 1.

(b) * * *

(4) *Continuous emission monitoring system* or *CEMS* means the equipment required by this section to sample, analyze, measure, and provide, by means of readings recorded at least once every 15 minutes (using an automated data acquisition and handling system (DAHS)), a permanent record of SO₂ and/or NO_x emissions, diluent, or stack gas volumetric flow rate.

* * * * *

(12) *SO₂* means sulfur dioxide.

(13) *Unit* means any of the units identified in paragraph (a) of this section.

(c) * * *

(1) The owners/operators of emissions units subject to this section shall not emit, or cause to be emitted, PM, NO_x, or SO₂ in excess of the following limitations:

* * * * *

Table 2 to § 52.2636

[Emission limits and required control technologies for BART units for which the EPA disapproved the State's BART determination and implemented a FIP]

Source name/BART unit	NO _x Required Control Technology	NO _x emission limit – lb/MMBtu (30-	SO ₂ emission limit – lb/MMBtu
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		day rolling average)	(averaged annually across Units 1 and 2)
Basin Electric Power Cooperative Laramie River Station/Unit 1 ¹	Selective Catalytic Reduction (SCR) ²	0.18/0.06 ⁴	0.12
Basin Electric Power Cooperative Laramie River Station/Unit 2 ¹	Selective Non-catalytic Reduction (SNCR) ³	0.18/0.15	
Basin Electric Power Cooperative Laramie River Station/Unit 3 ¹	Selective Non-catalytic Reduction (SNCR) ³	0.18/0.15	N/A
PacifiCorp Dave Johnston Unit 3	N/A	*0.07	N/A
PacifiCorp Wyodak Power Plant/Unit 1	N/A	0.07	N/A

¹ The owners and operators of Laramie River Station Unit 1 shall comply with the NO_x emission limit of 0.18 lb/MMBtu on **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]** and ending June 30, 2019. The owners and operators of Laramie River Station Unit 1 shall comply with the NO_x emission limit of 0.06 lb/MMBtu on July 1, 2019. The owners and operators of the Laramie River Station Units 2 and 3 shall comply with the NO_x emission limit of 0.18 lb/MMBtu on **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]** and ending on December 30, 2018. The owners and operators of Laramie River Station Units 2 and 3 shall comply with the NO_x emission limit of 0.15 lb/MMBtu on December 31, 2018. The owners and operators of Laramie River Station Units 1 and 2 shall comply with the SO₂ emission limit of 0.12 lb/MMBtu averaged annually across the two units on December 31, 2018.

² By July 1, 2019.

³ By December 30, 2018.

⁴ These limits are in addition to the NO_x emission limit for Laramie River Station Unit 1 of 0.07 MMBtu on a 30-day rolling average.

* (or 0.28 and shut-down by December 31, 2027).

* * * * *

(d) * * *

(2) The owners and operators of Laramie River Station Unit 1 shall comply with the NO_x emission limit of 0.18 lb/MMBtu on **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]** and ending June 30, 2019. The owners and

operators of Laramie River Station Unit 1 shall comply with the NO_x emission limit of 0.06 lb/MMBtu on July 1, 2019. The owners and operators of the Laramie River Station Units 2 and 3 shall comply with the NO_x emission limit of 0.18 lb/MMBtu on **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]** and ending on December 30, 2018. The owners and operators of Laramie River Station Units 2 and 3 shall comply with the NO_x emission limit of 0.15 lb/MMBtu on December 31, 2018. The owners and operators of Laramie River Station Units 1 and 2 shall comply with the SO₂ emission limit of 0.12 lb/MMBtu averaged annually across the two units on December 31, 2018.

(3) The owners and operators of the other BART sources subject to this section shall comply with the emissions limitations and other requirements of this section by March 4, 2019.

(4)(i) The owners and operators of PacifiCorp Dave Johnston Unit 3 will meet a NO_x emission limit of 0.07 lb/MMBtu (30-day rolling average) by March 4, 2019; or

(ii) Alternatively, the owners and operators of PacifiCorp Dave Johnston Unit 3 will permanently cease operation of this unit on or before December 31, 2027.

(e) *Compliance determinations for SO₂ and NO_x.*

(1) * * *

(i) *CEMS.* At all times after the earliest compliance date specified in paragraph (d) of this section, the owner/operator of each unit shall maintain, calibrate and operate a CEMS, in full compliance with the requirements found at 40 CFR part 75, to accurately measure SO₂ and/or NO_x, diluent, and stack gas volumetric flow rate from each unit. The CEMS shall be used to determine compliance with the emission limitations in paragraph (c) of this section for each unit.

(ii) * * *

(A) For any hour in which fuel is combusted in a unit, the owner/operator of each unit shall calculate the hourly average NO_x emission rates in lb/MMBtu at the CEMS in accordance with the requirements of 40 CFR part 75. At the end of each operating day, the owner/operator shall calculate and record a new 30-day rolling average emission rate in lb/MMBtu from the arithmetic average of all valid hourly emission rates from the CEMS for the current operating day and the previous 29 successive operating days.

(B) At the end of each calendar year, the owner/operator shall calculate the annual average SO₂ emission rate in lb/MMBtu across Laramie River Station Units 1 and 2 as the sum of the SO₂ annual mass emissions (pounds) divided by the sum of the annual heat inputs (MMBtu). For Laramie River Station Units 1 and 2, the owner/operator shall calculate the annual mass emissions for SO₂ and the annual heat input in accordance with 40 CFR Part 75 for each unit.

(C) An hourly average SO₂ and/or NO_x emission rate in lb/MMBtu is valid only if the minimum number of data points, as specified in 40 CFR part 75, is acquired by both the pollutant concentration monitor (SO₂ and/or NO_x) and the diluent monitor (O₂ or CO₂).

(D) Data reported to meet the requirements of this section shall not include data substituted using the missing data substitution procedures of subpart D of 40 CFR part 75, nor shall the data have been bias adjusted according to the procedures of 40 CFR part 75.

* * * * *

(h) * * *

(1) The owner/operator of each unit shall submit quarterly excess emissions reports for SO₂ and/or NO_x BART units no later than the 30th day following the end of each calendar quarter. Excess emissions means emissions that exceed the emissions limits specified in paragraph (c) of this section. The reports shall include the magnitude, date(s) and duration of each period of

excess emissions, specific identification of each period of excess emissions that occurs during startups, shutdowns and malfunctions of the unit, the nature and cause of any malfunction (if known), and the corrective action taken or preventative measures adopted.

* * * * *

(i) * * *

(1) The owner/operator shall promptly submit notification of commencement of construction of any equipment which is being constructed to comply with the SO₂ and/or NO_x emission limits in paragraph (c) of this section.

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